

NEW SPECIES OF MICROCADDISFLIES (TRICHOPTERA:
HYDROPTILIDAE) FROM NORTHERN FLORIDASTEVEN C. HARRIS¹

Research Associate, Section of Invertebrate Zoology

ABSTRACT

Seven new species of microcaddisflies, *Oxyethira chrysocara*, *Hydroptila eglinensis*, *H. bribriae*, *H. sarahae*, *H. okaloosa*, *H. hamiltoni* and *H. sykorai* from northern Florida are described and illustrated. New figures for previously described species, *H. carolae*, *H. circangula* and *H. roberti*, are provided to facilitate identifications of the new species.

KEY WORDS: Trichoptera, Hydroptilidae, microcaddisflies, new species, Florida

INTRODUCTION

Ongoing collecting in spring-fed streams and other aquatic habitats in northern Florida by Manuel Pescador and Andrew Rasmussen of Florida A&M University have yielded several new species of caddisflies. In this paper, seven new microcaddisflies are described, one in the genus *Oxyethira* and six in the genus *Hydroptila*. With these new species, microcaddisflies in Florida now total 60 species (Pescador et al., 1995; Harris et al., 1998). The distribution of most of the new species is apparently restricted to small streams and springs on Eglin Air Force Base, an area of northern Florida noted for several endemic caddisflies (Harris et al., 1982; Gordon, 1984), three of which are microcaddisflies. Several of the new species are very similar to more widely occurring southeastern species, suggesting that this region of northern Florida may have contained isolated relict populations at some point in time. Terminology used in the descriptions follows that of Marshall (1979), with length measured from the tip of head to the wing end. Type material will be deposited at the National Museum of Natural History, Smithsonian Institution (NMNH), Carnegie Museum of Natural History (CMNH), Florida State Collection of Arthropods (FSCA), Illinois Natural History Survey (INHS), Clemson University Arthropod Collection (CUAC), Florida A&M University (FAMU), and Clarion University (CU).

SYSTEMATIC ENTOMOLOGY

Oxyethira chrysocara, new species

(Fig. 1)

Diagnosis.—In many respects, *Oxyethira chrysocara* is very similar to *O. dunbartonensis* Kelley from South Carolina and Georgia. Both species have reduced inferior appendages and elongate processes from the phallus apex, but the two species differ in the details of these structures. In *O. dunbartonensis* the phallic processes are membranous and linear, whereas in *O. chrysocara* they are sclero-

¹Department of Biology, Clarion University, Clarion, PA 16214.
Submitted 3 October 2001.

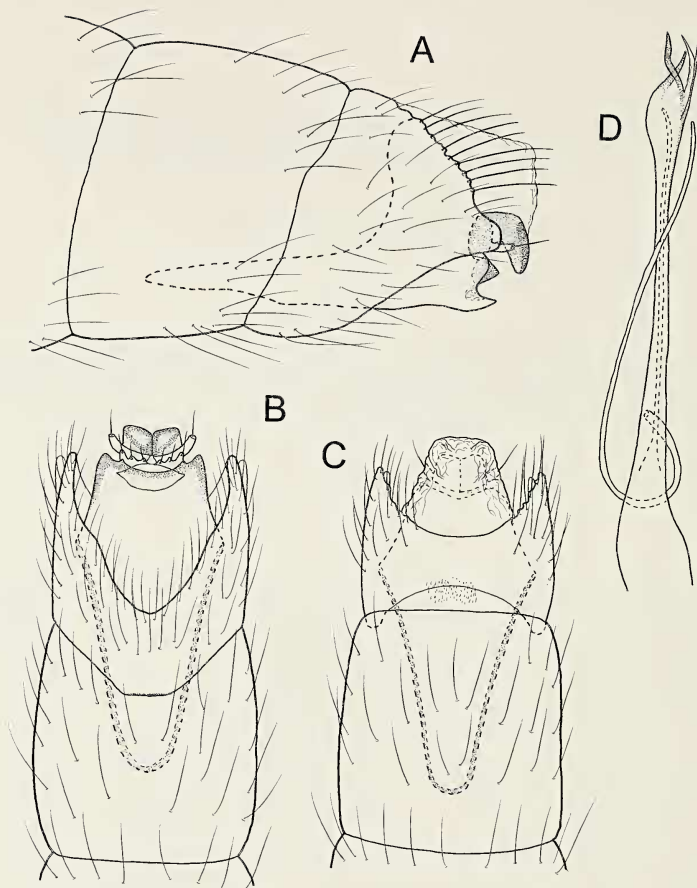


Fig. 1.—*Oxyethira chrysocara* new species, male genitalia: A. Lateral. B. Ventral. C. Dorsal. D. Phallus, lateral.

tized and curving; and the inferior appendages differ in the number of setiferous lobes, two in *O. dunbartonensis*, six in *O. chrysocara*. As well, the new species lacks the ventromesal process from abdominal segment VII, which is present in *O. dunbartonensis*. The species is known only from the type locality, a small headwater stream in Clay County.

Description.—Male. Length 2.4 mm. 25 antennal segments. Brown in alcohol. Abdominal segment VII annular in lateral view; emarginate posteriorly in ventral view, lacking ventromesal process. Segment VIII in lateral view narrowing posteromesally to truncate knob; deeply incised ventrally, shallowly emarginate dorsally. Segment IX in lateral aspect narrowing anteriorly, posterodorsally a thin bridge, posteroventrally narrowing to acute process; in ventral view tapering anteriorly, truncate posteriorly; dorsally fused with X. Segment X rectanguloid in lateral aspect; dorsally a membranous lobe, gradually tapering distally to truncate apex. Inferior appendages reduced to triangular knob on the inner surface of segment IX, thin in ventral view with numerous setiferous lobes along posterior margin. Subgenital plate tongue-like in lateral view and strongly downturned; in ventral view square, fused along mesal margin, narrow bilobed process ventrad. Phallus long and narrow with broad medial constriction; apical portion bulbous with pair of crossing sclerous fingerlike processes, elongate lip ventrally; long paramere at base of medial constriction and encircling shaft.

Type Specimens.—Holotype, ♂ (NMNH): **FLORIDA. Clay County:** Gold Head Branch near old mill crossing, 29°49'56"N, 81°56'45"W, 1 May 1998, A. Rasmussen.

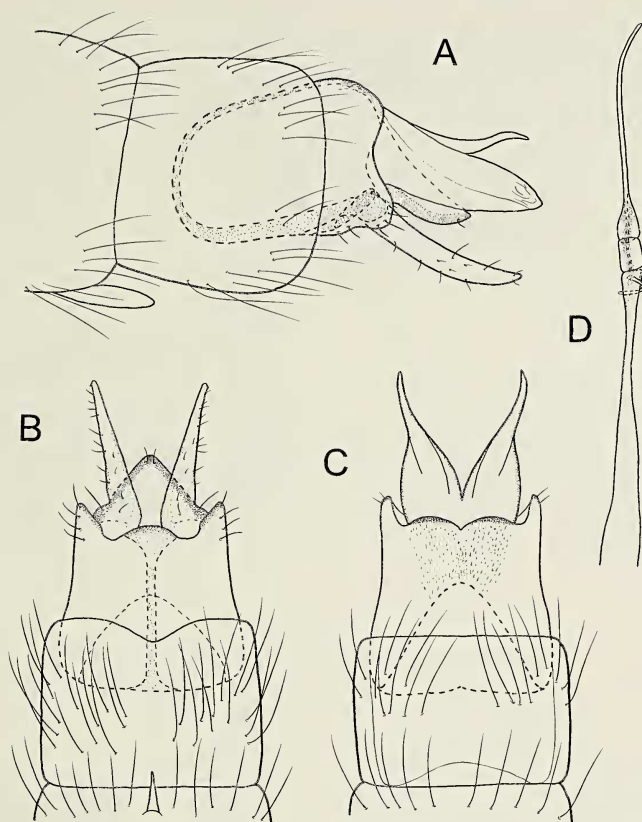


Fig. 2.—*Hydroptila eglinensis* new species, male genitalia: A. Lateral. B. Ventral. C. Dorsal. D. Phallus, ventral.

Etymology.—From the Greek “gold head,” referring to the type locality of the new species.

Hydroptila eglinensis, new species
(Figs. 2, 3A)

Diagnosis.—In many features, *H. eglinensis* is similar to *H. disgalera* Holzenthal and Kelley. Both species lack the eversible scent glands on the heads of the males, and genitalic features are similar. *Hydroptila eglinensis* is readily distinguished by the saberlike inferior appendages, which are clublike in *H. disgalera*. The new species is widely distributed in the coldwater streams on Eglin Air Force Base.

Description.—Male. Length 2.2–2.7 mm. 28 antennal segments. Head lacking eversible glands under the dorsal scent caps. Brown in alcohol. Abdominal segment VII annular with short posteromesal process from venter. Segment VIII annular; ventrally with slight emargination on posterior margin. Segment IX roughly rectangular in lateral aspect, rounded anteriorly, posteriorly with mesal emargination; square in ventral view, truncate anteriorly, posteriorly with wide mesal incision, elongate mesal sclerite internally; dorsum with wide incision on posterior margin. Segment X elongate and tapering distally in lateral view, fingerlike process from dorsum; dorsally with deep mesal excision, lateral lobes abruptly narrowing at midlength. Inferior appendages thin and tapering to slightly upturned apex in lateral view; triangular in ventral view, diverging apically. Subgenital plate triangular in lateral and ventral views, sclerous along posterior margin. Phallus elongate and tubular, composed of three sections; anterior section wide basally, bearing short paramere below juncture with short, tubular median section; distal portion about same length as basal portion, wide at juncture, slender apically.

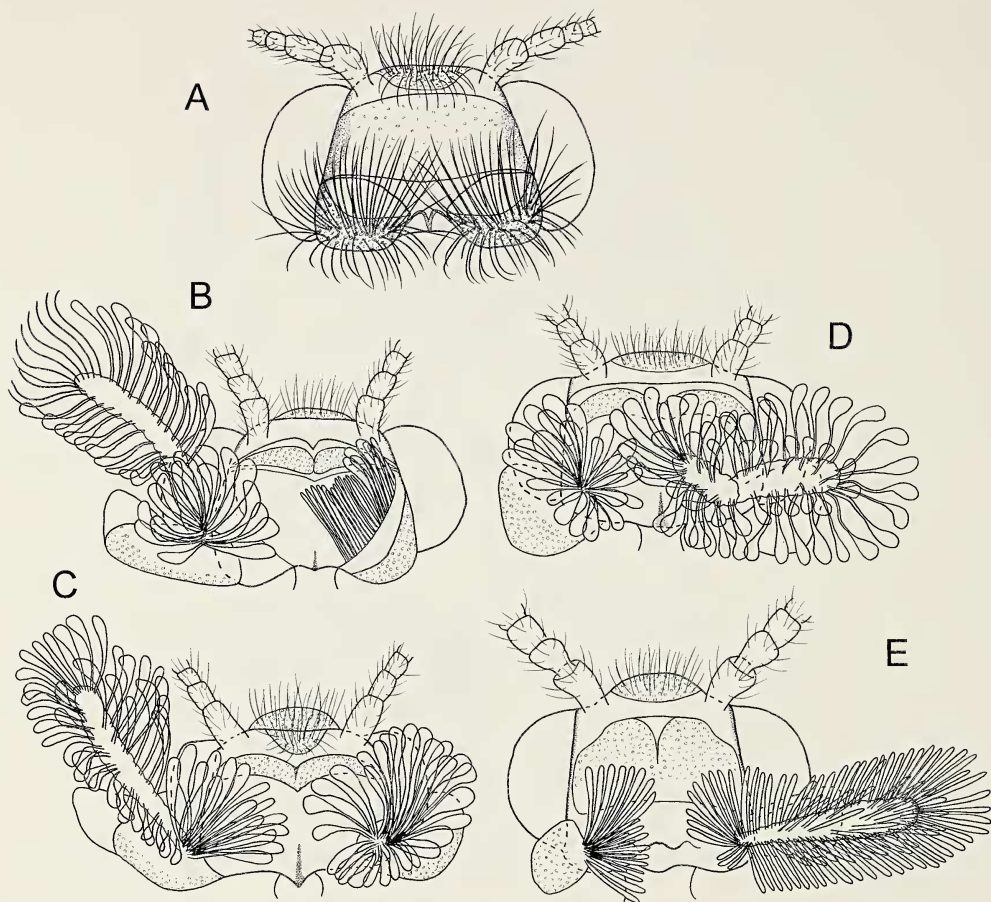


Fig. 3.—Eversible scent glands on heads of male *Hydroptila*: A. *Hydroptila eglinensis* new species. B. *Hydroptila bribriae* new species. C. *Hydroptila carolae* Holzenthal and Kelley. D. *Hydroptila sarahae* new species. E. *Hydroptila circangula* Harris.

Type Specimens.—Holotype ♂ (NMNH): **FLORIDA. Okaloosa County**: Rogue Creek, 0.6 km S Base Rd. 232, Eglin Air Force Base, 30°33'19"N, 86°34'51"W, 21 May 1998, M. Pescador, A. Rasmussen. Paratypes: **FLORIDA**. Same locality and data as holotype, 28 ♂ (10♂ NMNH, 10♂ CMNH, 4♂ INHS, 4♂ FSCA), same locality, but 28 October 1998, 3 ♂ (CU), Juniper Creek, at Base Rd. 221, Eglin Air Force Base, 1.3 km E State Rd. 85, 30°36'29"N, 86°31'24"W, 21 May 1998, M. Pescador, A. Rasmussen, 1♂ (CU), Juniper Creek at head, west side of Base Rd. 231, Eglin Air Force Base, SE Duke Field, 30°36'21" N, 86°30'05" W, 21 May 1998, M. Pescador, A. Rasmussen, 3 ♂ (CUAC), East Turkey Hen Creek at Base Rd. 601, Eglin Air Force Base, 30°39'27" N, 86°34'05" W, 28 October 1998, M. Pescador, A. Rasmussen, 2 ♂ (FAMU), East Turkey Hen Creek at head, 0.3 km W Okaloosa Lookout Tower, 30°38'48" N, 86°33'23" W, 25 May 1998, M. Pescador, A. Rasmussen, 13 ♂ (5♂ NMNH, 5♂ CMNH, 3♂ INHS), unnamed tributary to Turkey Creek at Base Rd. 634, Eglin Air Force Base, 30°35'29" N, 86°35'58" W, 27 October 1998, M. Pescador, A. Rasmussen, 4 ♂ (2♂ CUAC, 2♂ FAMU).

Etymology.—From Eglin, in reference to this species occurring on Eglin Air Force Base.

Hydroptila bribriae, new species

(Figs. 3B, 4A–D)

Diagnosis.—This species and the following can be grouped with *H. carolae* Holzenthal and Kelley and *H. circangula* Harris on the basis of genitalic features.

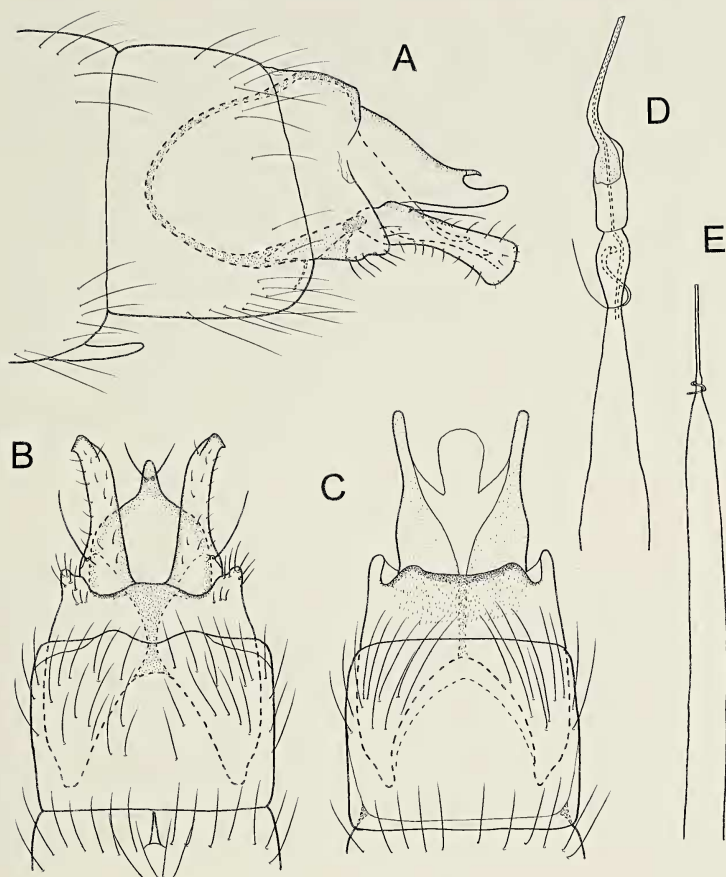


Fig. 4.—*Hydroptila bribriæ* new species, male genitalia: A. Lateral. B. Ventral. C. Dorsal. D. Phallus, ventral. E. *Hydroptila carolæ* Holzenthal and Kelley, phallus, ventral.

All four have the subgenital plate ending in a nipplelike projection; all four have club-shaped inferior appendages; and all have a similar phallic structure. The species are separated by a combination of genitalic structures, and the structure of scent glands on the head. *Hydroptila bribriæ* is separated from *H. carolæ* by phallic structure, which in the latter is much more elongate basally (Fig. 4E), and from both *H. carolæ* and *H. circangula* by the scent glands of the head. The filaments of these glands are pipelike in both *H. bribriæ* (Fig. 3B) and *H. carolæ* (Fig. 3C), and linear in *H. circangula* (Fig. 3E). However, in *H. bribriæ* the filaments at the end of the eversible lobes are replaced by elongate hairs. *Hydroptila bribriæ* was widely distributed across Eglin Air Force Base.

Description.—Male. Length 2.2–2.7 mm. 30 antennal segments. Eversible scent glands of head with elongate pipe-shaped filaments, except at tip where replaced with long hairs. Brown in alcohol. Abdominal segment VII annular with short posteromesal process from venter. Segment VIII annular; ventrally with slight emargination on posterior margin. Segment IX roughly rectangular in lateral aspect, rounded anteriorly, posteriorly with mesal emargination; in ventral view, deeply incised anteriorly, posteriorly with wide, shallow incision mesally, narrow internal mesal sclerite; dorsum with thin lateral lobes posteriorly. Segment X elongate and tapering distally in lateral view, central lobe appearing as short fingerlike process from dorsum; dorsally trifid, with elongate lateral lobes narrowing abruptly at midlength,

mesal lobe membranous and round. Inferior appendages club-shaped in lateral view, widening towards apex; roughly rectanguloid in ventral view, diverging apically, sclerotized point on outer apical margin, elongate seta from basal margin. Subgenital plate triangular in lateral view; in ventral view rounded basally, apex narrowing mesally to nipplelike projection bearing pair of stout setae. Phallus tubular, composed of two sections; anterior section wide basally, bearing short paramere below juncture with posterior section, which is tubular at base, then narrowing abruptly to slender curved apex.

Type Specimens.—Holotype ♂ (NMNH): **FLORIDA. Santa Rosa County**: Indigo Creek, at Base Rd. 213, Eglin Air Force Base, 19 March 1998, M. Pescador, A. Rasmussen. Paratypes: **FLORIDA**. Same locality and data as holotype, 5 ♂ (3♂ NMNH, 2♂ CMNH). **Okaloosa County**: Juniper Creek, at Base Rd. 221, Eglin Air Force Base, 1.3 km E State Rd. 85, 30°36'29"N, 86°31'24"W, 21 May 1998, M. Pescador, A. Rasmussen, 17 ♂ (5♂ CMNH, 3♂ FSCA, 3♂ CUAC, 3♂ CU, 3♂ INHS), same, but 19 March 1998, 2 ♂ (FAMU), Juniper Creek at head, west side of Base Rd. 231, Eglin Air Force Base, SE Duke Field, 30°36'21" N, 86°30'05" W, 21 May 1998, M. Pescador, A. Rasmussen, 1 ♂ (CU), East Turkey Hen Creek at head, 0.3 km W Okaloosa Lookout Tower, 30°38'48" N, 86°33'23" W, 25 May 1998, M. Pescador, A. Rasmussen, 1 ♂ (FAMU). **Walton County**: Rocky Creek, at headwaters, Eglin Air Force Base, 25 April 1979, J. Scheiring, 3 ♂ (2♂ CMNH, 1♂ NMNH).

Etymology.—Named for Briana Kriebel, affectionately nicknamed "bribri" and "bug" by her family, in recognition of the Kriebel family's support of Clarion University.

Hydroptila sarahae, new species (Figs. 3D, 5)

Diagnosis.—This species appears to be closest to *Hydroptila circangula* Harris, on the basis of genitalic features. The appearance of the inferior appendages and the phallus are nearly identical, but subtle differences can be found. Both have the subgenital plate ending in a nipplelike projection, but this projection is much longer in the new species, and although the inferior appendages are similar in ventral aspect, an elongate seta at midlength is present in *H. sarahae*, but absent in *H. circangula*. The new species can also be separated by the arrangement of the scent glands on the head, which have linear filaments in *H. circangula* (Fig. 3E) as compared to the pipe-shaped filaments of *H. sarahae* (Fig. 3D). As with the previous two species, *H. sarahae* is widely distributed in the streams on Eglin Air Force Base.

Description.—Male. Length 2.0–2.5 mm. 26 antennal segments. Eversible scent glands of head with elongate pipe-shaped filaments. Brown in alcohol. Abdominal segment VII annular with short posteromesal process from venter. Segment VIII annular. Segment IX roughly rectangular in lateral aspect, rounded anteriorly, posteriorly with slight ventral emargination; in ventral view, deeply incised anteriorly, posteriorly with pair of lateral incisions, narrow mesal sclerite; dorsum truncate posteriorly. Segment X elongate and hoodlike in lateral view; dorsally with deep mesal incision posteriorly, lateral margins sclerous. Inferior appendages boat-shaped in lateral view, widening to rounded apex; triangular in ventral view, diverging distally with apices rounded, elongate seta laterally at midlength. Subgenital plate elongate and slender in lateral view; in ventral view triangular, apex narrowing mesally to long nipplelike projection bearing pair of stout setae. Phallus tubular, evenly divided into two sections; anterior section wide basally, bearing short paramere below juncture with posterior section, which is wide and tubular basally, with slender ejaculatory duct protruding apically.

Type Specimens.—Holotype ♂ (NMNH): **FLORIDA. Okaloosa County**: Rogue Creek, 0.6 km S Base Rd. 232, Eglin Air Force Base, 30°33'19"N, 86°34'51"W, 21 May 1998, M. Pescador, A. Rasmussen. Paratypes: **FLORIDA**. Same locality and data as holotype, 15 ♂ (6♂ NMNH, 6♂ CMNH, 3♂ INHS), same locality, but 28 October 1998, 4♂ (CU), Rogue Creek at Base Rd. 233, Eglin Air Force Base, 14 August 1985, B. Armitage, 2 ♂ (CU), Juniper Creek, at Base Rd. 221, Eglin Air Force Base, 1.3 km E State Rd. 85, 30°36'29"N, 86°31'24"W, 21 May 1998, M. Pescador, A. Rasmussen, 1 ♂ (CUAC), East Turkey Hen Creek at head, 0.3 km W Okaloosa Lookout Tower, 30°38'48" N, 86°33'23", 21 May 1998, M. Pescador, A. Rasmussen, 1 ♂ (FSCA), East Turkey Hen Creek at Base Rd. 601, Eglin Air Force Base, 30°39'27" N, 86°34'05" W, 26 October 1998, M. Pescador, A. Rasmussen, 1 ♂ (FAMU), Turkey Creek at Base Rd. 232, Eglin Air Force Base, 30°33'42" N, 86°32'10" W, 27 October 1998, M. Pescador, A. Rasmussen, 2 ♂ (FSCA), Turkey Creek at Base Rd. 232, Eglin Air Force Base, 30°33'42" N, 86°32'10" W, 21 May 1998, M. Pescador, A. Rasmussen, 2 ♂ (CUAC), Turkey Creek at Base Rd. 233, Eglin Air Force Base, 19 August 1983, B. Armitage, 47♂ (14♂ NMNH,

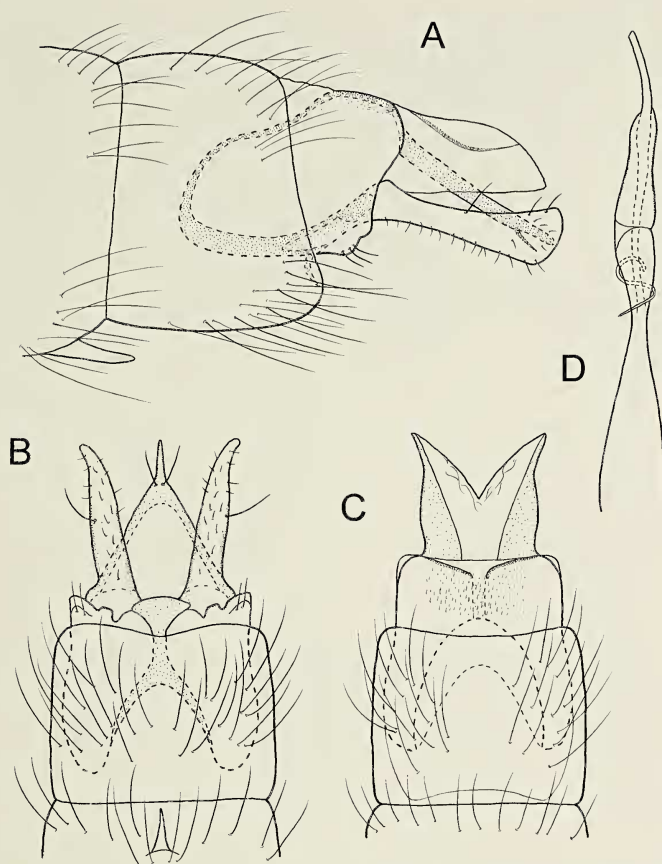


Fig. 5.—*Hydroptila sarahae* new species, male genitalia: A. Lateral. B. Ventral. C. Dorsal. D. Phallus, ventral.

13♂ CMNH, 10♂ INHS, 10♂ FAMU), unnamed tributary to Turkey Creek at Base Rd. 619, Eglin Air Force Base, 14 August 1985, B. Armitage, 11 ♂ (4♂ FSAC, 4♂ CUAC, 3♂ CU).

Etymology.—Named for my daughter Sarah on the occasion of her 21st birthday.

Hydroptila okaloosa, new species

(Fig. 6)

Diagnosis.—*Hydroptila okaloosa* bears some resemblance to *H. pecos* Ross and *H. ajax* Ross in the shape of the downturned inferior appendages, but the large, bulbous segment X is more similar to that of *H. protera* Ross. The new species is quite distinctive, particularly in the appearance of the phallic apex, but the combination of the ventrad curving inferior appendages and deeply incised tenth tergum will also separate *H. okaloosa*. Despite widespread collecting in the streams of Eglin Air Force Base, *H. okaloosa* was only found in Rogue Creek.

Description.—Male. Length 2.9–3.1 mm. 30 antennal segments. Eversible scent glands of head with long pipe-shaped filaments, except at tip where replaced with long hairs (as in Fig. 3B). Brown in alcohol. Abdominal segment VII annular with short posteromesal process from venter. Segment VIII tapering posteroventrally in lateral aspect, setose lobe posterodorsally; ventrally with mesal incision on posterior margin; rectanguloid dorsally. Segment IX short, largely contained within VIII, rounded

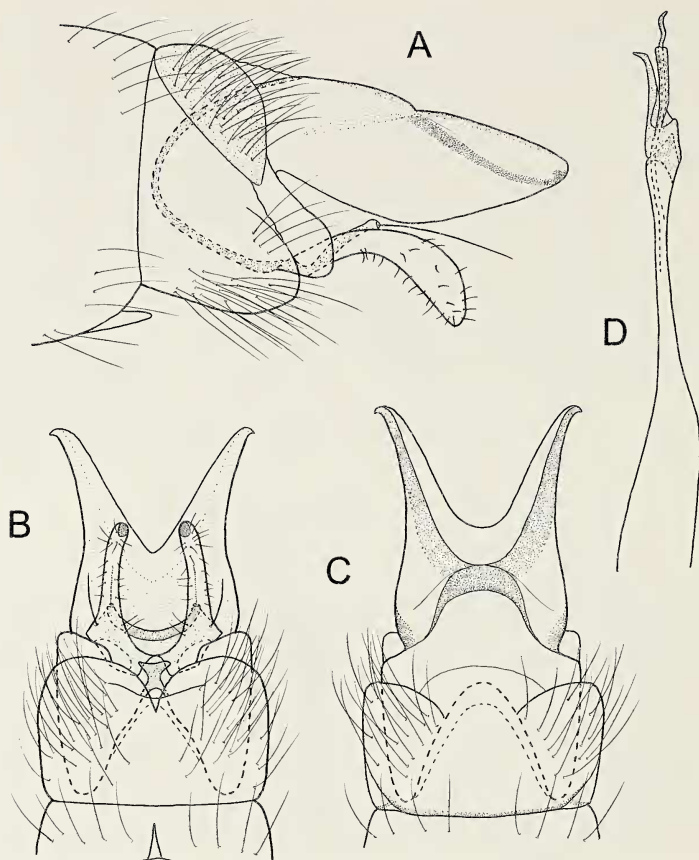


Fig. 6.—*Hydroptila okaloosa* new species, male genitalia: A. Lateral. B. Ventral. C. Dorsal. D. Phallus, ventral.

anteriorly; in ventral view deeply incised anteriorly, posteriorly with wide emargination; dorsum narrowing to rounded lobe which is apparently fused with X. Segment X elongate and bulbous in lateral view, sclerotized band dorsolaterally; in dorsal view deeply emarginate, lateral extensions tapering distally to acute out-turned apices, outer margins sclerous. Inferior appendages enlarged distally and downturned in lateral view; ventrally long and fingerlike, contiguous basomesally, inner margins slightly concave. Subgenital plate long and thin in lateral aspect, bearing elongate seta apically; ventrally a thin, narrow shelf, emarginate and sclerous on posterior margin. Phallus tubular, apex divided into two elongate processes, outer process curved at apex, inner process rectanguloid and bearing ejaculatory duct which protrudes apically; paramere absent.

Type Specimens.—Holotype ♂ (NMNH): **FLORIDA. Okaloosa County**: Rogue Creek, 0.6 km S Base Rd. 232, Eglin Air Force Base, 30°33'19"N, 86°34'51"W, 21 May 1998, M. Pescador, A. Rasmussen. Paratype: **FLORIDA**. Same locality as holotype, but 7 April 1999, 1 ♂ (CMNH).

Etymology.—Named for the type locality in Okaloosa County.

Hydroptila hamiltoni, new species
(Fig. 7A–D)

Diagnosis.—In overall genitalic features, this new species is nearly identical to *H. roberta* Hamilton and Holzenthal from Georgia. Only the structure of the phallus will serve to separate the two species; in *H. roberta* (Fig. 3E) the basal and apical sections of the phallus are the same length, with the phallic apex

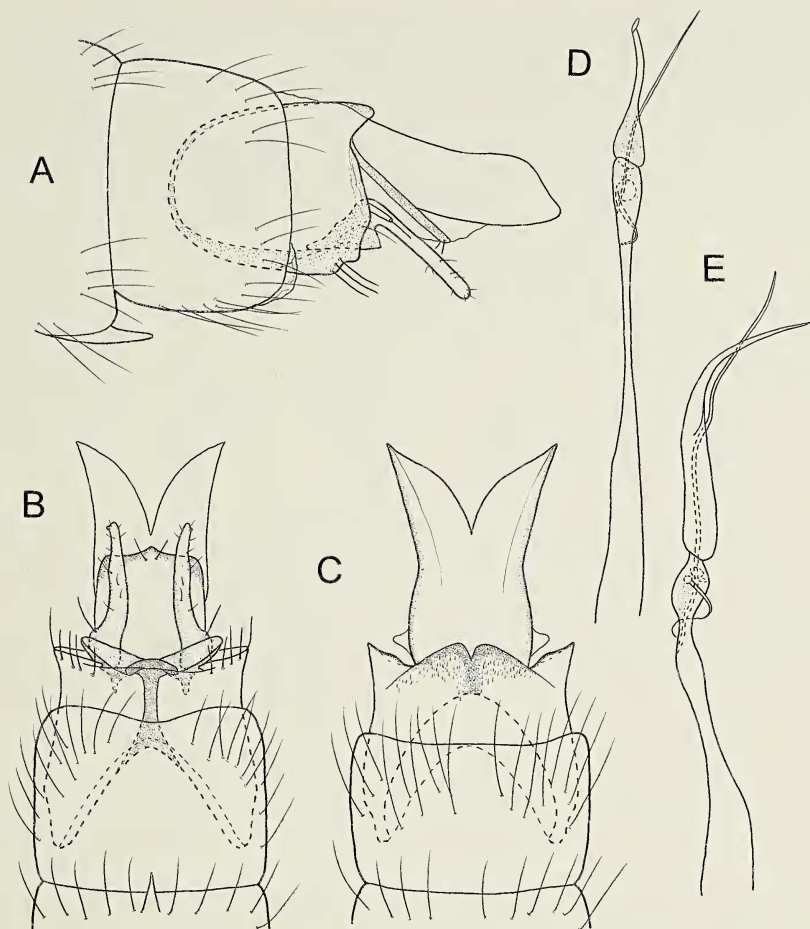


Fig. 7.—*Hydroptila hamiltoni* new species, male genitalia: A. Lateral. B. Ventral. C. Dorsal. D. Phallus, ventral. E. *Hydroptila roberta* Hamilton and Holzenthal, phallus, ventral.

elongate and thin, while in *H. hamiltoni*, the basal section of the phallus is about four times the length of the apical section, with the phallic apex short. The new species was widely distributed in the streams on Eglin Air Force Base.

Description.—Male. Length 2.5–2.8 mm. 27 antennal segments. Eversible scent glands of head with elongate pipelike filaments, except at tips (as in Fig. 3B). Brown in alcohol. Abdominal segment VII annular with short posteromesal process from venter. Segment VIII annular. Segment IX in lateral aspect rounded anteriorly, posteriorly with dorsal protuberance; ventrally with deep mesal incision anteriorly, truncate posteriorly; dorsum lobate posteromesally with narrow incision. Segment X elongate and bulbous in lateral view; narrow dorsally with deep mesal excision posteriorly. Inferior appendages thin and nearly parallel-sided in lateral view, strongly curved at base which bears thin setiferous lobe; in ventral view elongate and narrow, tapering distally with sclerotized lateral point at apex, widely separated basally. Subgenital plate long and slender in lateral view; ventrally a thin, narrow shelf, emarginate and sclerous on posterior margin. Phallus elongate and tubular, distal portion about $\frac{1}{4}$ length of basal portion, widening at juncture, narrowing apically to recurved tip; short paramere encircling shaft below juncture of sections.

Type Specimens.—Holotype ♂ (NMNH): **FLORIDA, Okaloosa County:** Rogue Creek, 0.6 km S Base Rd. 232, Eglin Air Force Base, 30°33'19"N, 86°34'51"W, 21 May 1998, M. Pescador, A. Rasmussen. Paratypes: **FLORIDA.** Same locality and data as holotype, 13 ♂ (5♂ NMNH, 4♂ CMNH,

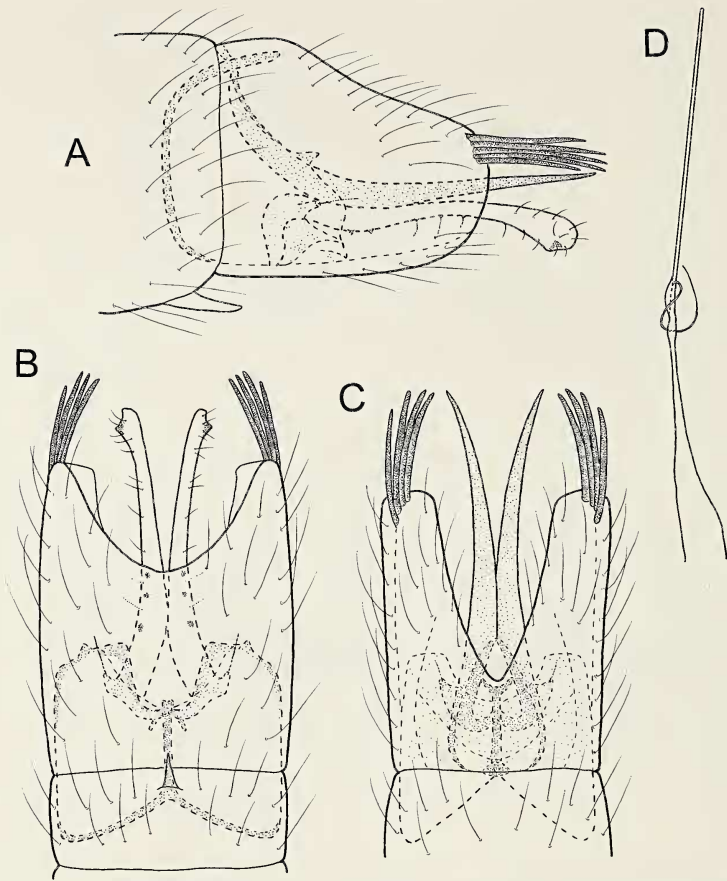


Fig. 8.—*Hydroptila sykorai* new species, male genitalia: A. Lateral. B. Ventral. C. Dorsal. D. Phallus, ventral.

4♂ INHS), Juniper Creek, at Base Rd. 221, Eglin Air Force Base, 1.3 km E State Rd. 85, 30°36'29"N, 86°31'24"W, 21 May 1998, M. Pescador, A. Rasmussen, 6 ♂ (2♂ FAMU, 2♂ CUAC, 2♂ CU), East Turkey Hen Creek at head, 0.3 km W Okaloosa Lookout Tower, 30°38'48" N, 86°33'23" W, 25 May 1998, M. Pescador, A. Rasmussen, 3 ♂ (2♂ FAMU, 1♂ FSCA).

Etymology.—Named for Steven W. Hamilton, co-describer of *H. roberta*, in recognition of his many contributions to the study of caddisflies.

***Hydroptila sykorai*, new species**
(Fig. 8)

Diagnosis.—This new species is very similar in overall appearance to *Hydroptila ouachita* Holzenthal and Kelley, which is apparently endemic to Schoolhouse Spring, a small artesian spring, in Louisiana (Holzenthal and Kelley, 1983). Both species have heavy spines from the margins of abdominal segment VIII, but while these spines are short and curved inward in *H. ouachita*, they are much longer and straight in *H. sykorai*. Both species also have abdominal segment X divided distally, but in *H. ouachita* this division is shallow, whereas in *H. sykorai* it is very deep, creating a pair of narrow rods. The locality of this new species is a small, cold, sand-bottom springrun.

Description.—Male. Length 1.9–2.3 mm. 28 antennal segments. Eversible scent glands of head with elongate pipe-shaped filaments (as in Fig. 3B). Brown in alcohol. Abdominal segment VII annular with short posteromesal process from venter. Segment VIII in lateral view elongate and tapering distally; deeply emarginate dorsally, with series of stout elongate spines from posterolateral margins; posterior margin with shallow mesal incision ventrally. Segment IX short, retracted within segments VII and VIII; narrowing dorsally in lateral view; in dorsal and ventral views square, with deep, rounded mesal incision posteriorly and shallow incision anteriorly. Segment X elongate and thin in lateral view; dorsally with deep mesal incision distally, creating acute, sclerous lateral rods. Inferior appendages long and thin in lateral view, widening to rounded apex distally; thin in ventral view, diverging distally with apices rounded and bearing darkened point laterally. Subgenital plate not evident. Phallus very narrow and tubular, with thin paramere encircling shaft near midlength.

Type Specimens.—Holotype male. **FLORIDA, Gadsden County**: headwaters of Quincy Creek, 7 km N Quincy at Florida A&M Research and Extension Center, 30°39'27" N, 84°36'50" W, 7 June 1999, A. Rasmussen, emergence trap (NMNH). Paratypes: **FLORIDA**. Same locality as holotype, but 17 January 1998, 1 ♂ (CMNH), same, but 20 March 1999, 1 ♂ (FAMU), same, but 4 April 1999, 1 ♂ (INHS), same, but 21 June 1999, 1 ♂ (CUAC).

Etymology.—Named for Jan Sykora, friend and colleague, in recognition of his contributions to the study of caddisflies.

ACKNOWLEDGMENTS

Appreciation is expressed to Manny Pescador and Andy Rasmussen of Florida A&M University for allowing me to examine microcaddisflies in their collections from northern Florida and for reviewing the resultant manuscript. John Morse of Clemson University kindly lent paratypes of *Hydroptila roberti*, *H. carolae*, and *H. ouachita* for examination. Brian Armitage of the Ohio Biological Survey and Joseph Scheiring provided some material from their collections on the Eglin Air Force Base. The comments of the anonymous manuscript reviewers and editors at the Carnegie Museum of Natural History are also greatly appreciated.

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